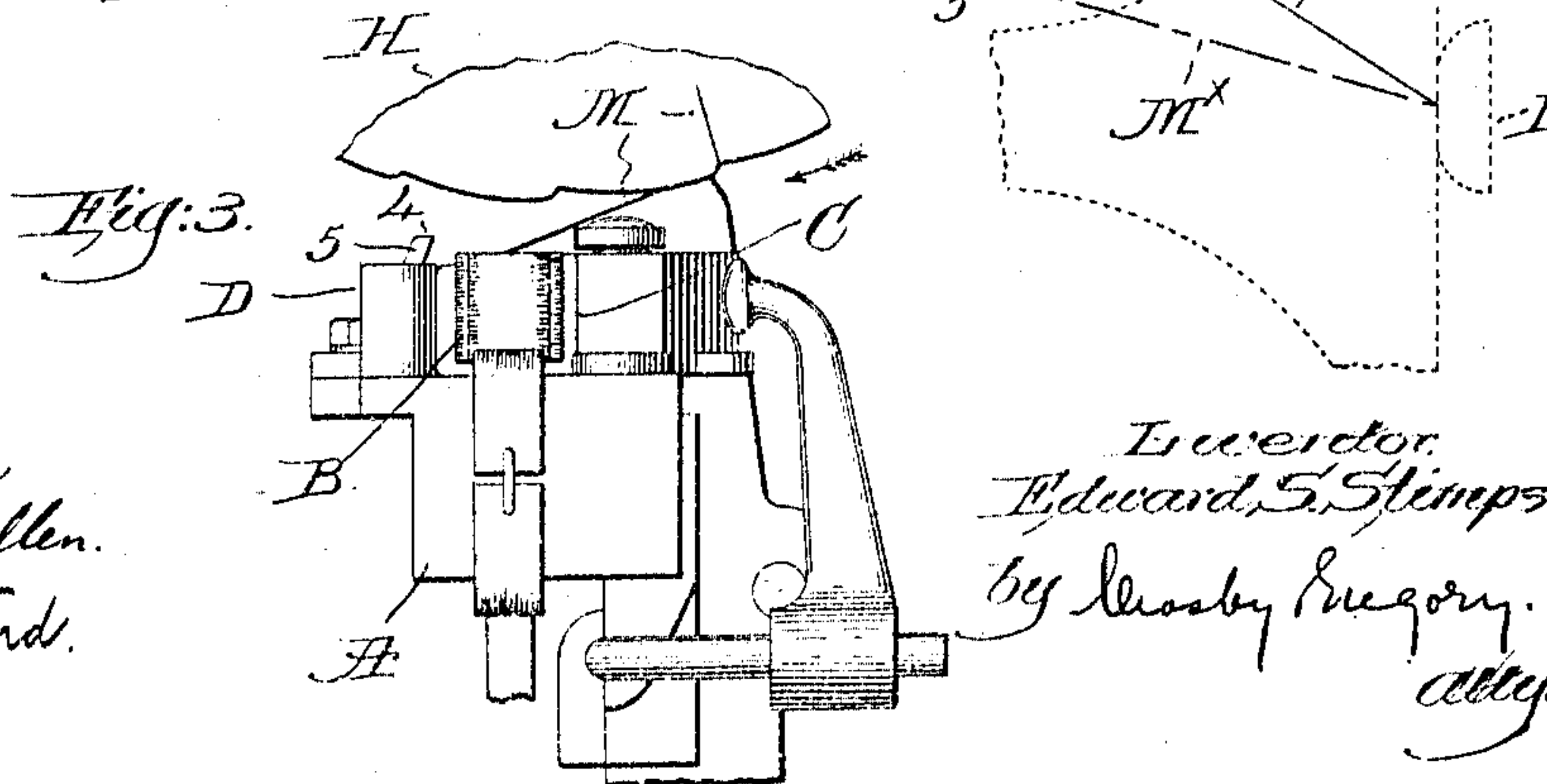
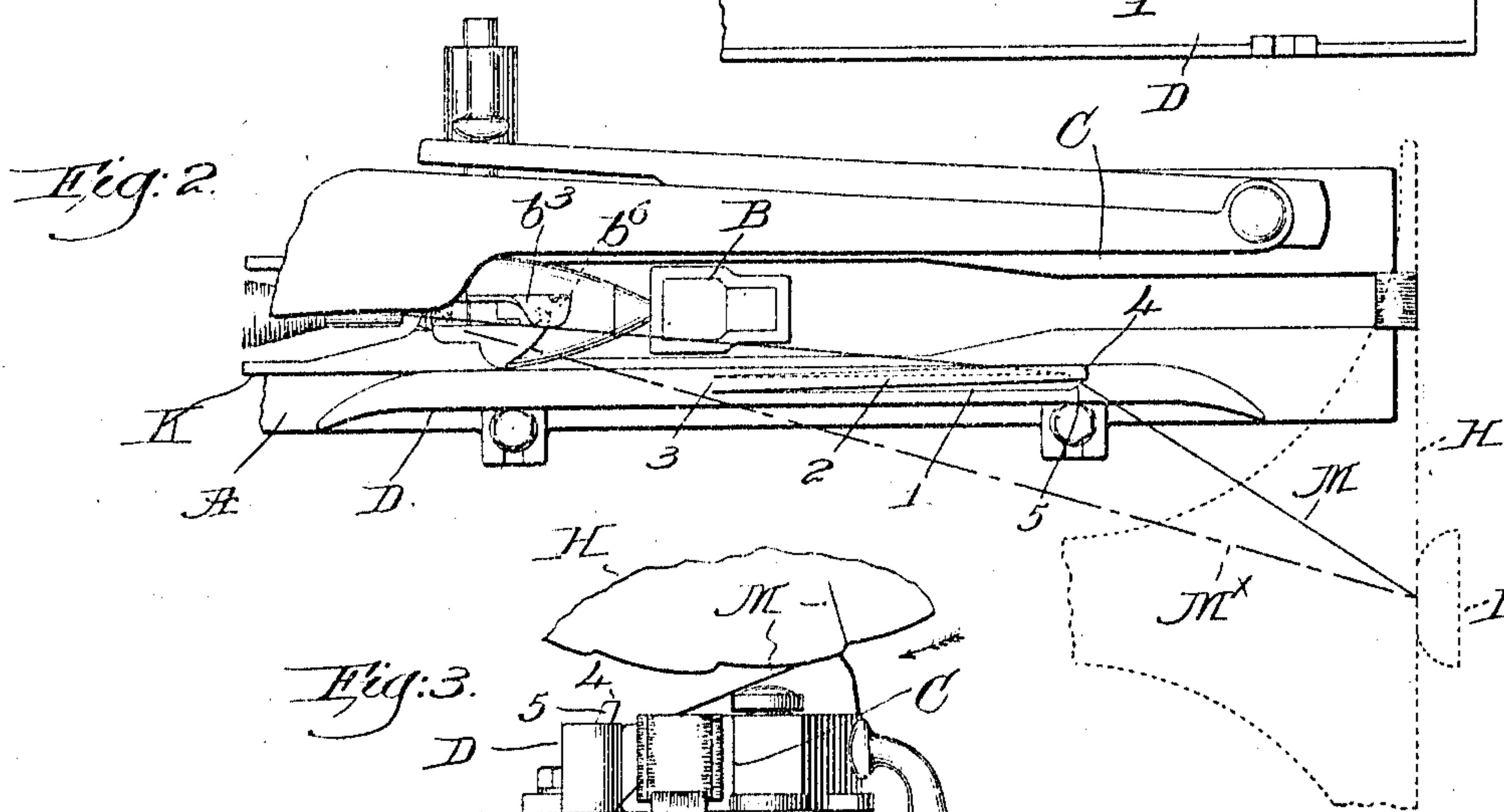
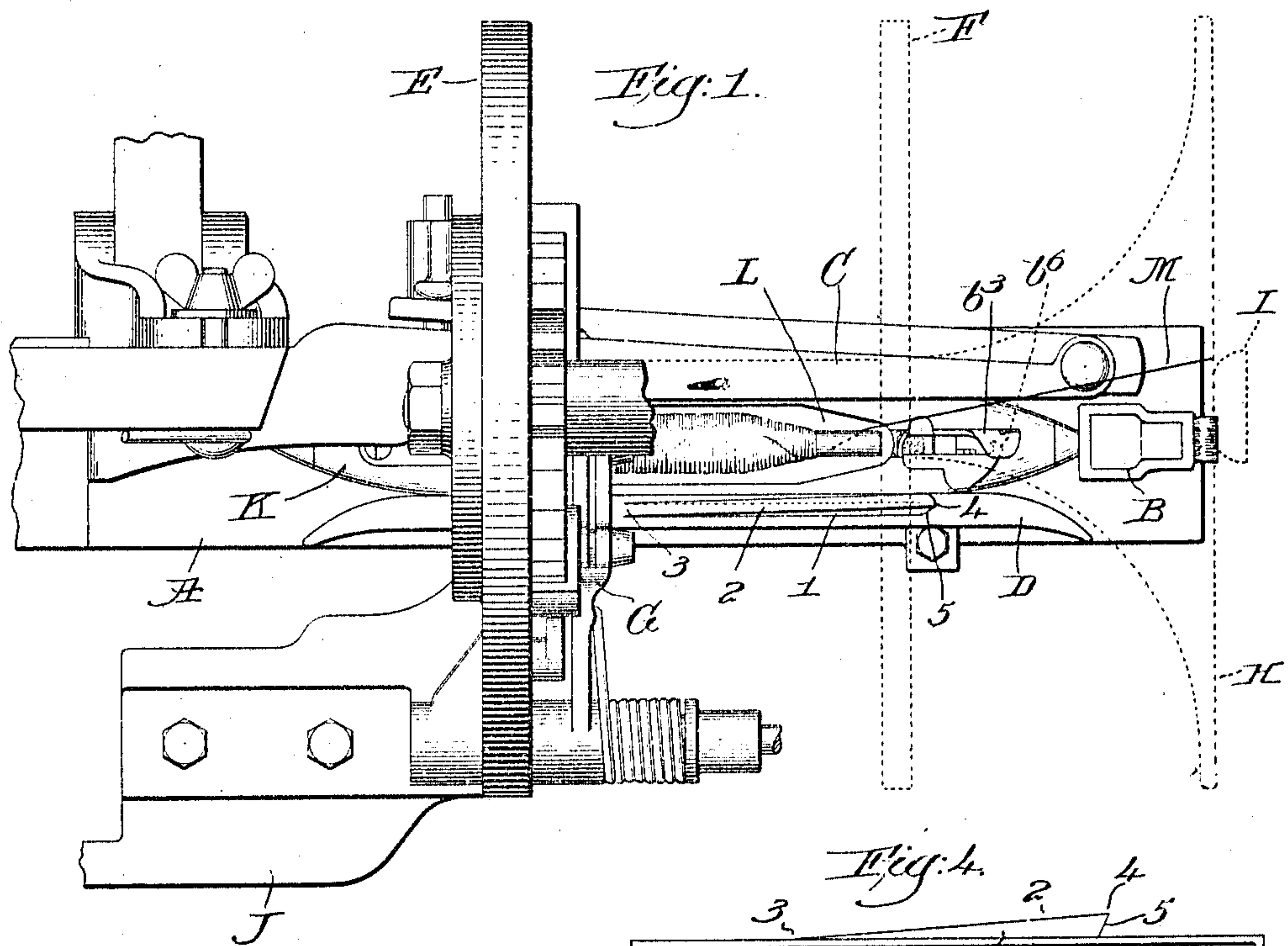


E. S. STIMPSON.
FILLING REPLENISHING LOOM.
APPLICATION FILED OCT. 23, 1909.

953,185.

Patented Mar. 29, 1910.



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UNITED STATES PATENT OFFICE.

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FILLING-REPLENISHING LOOM.

953,185.

Specification of Letters Patent. Patented Mar. 29, 1910.

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To all whom it may concern:

Be it known that I, EDWARD S. STIMPSON, a citizen of the United States, and resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Filling-Replenishing Looms, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to looms provided with mechanism to replenish automatically the filling in the working or running shuttle, and it has for its object the production of means for so controlling the filling end of a fresh supply of filling that the shuttle-threading device will assume control of the fresh filling at about the time the shuttle is leaving the shuttle-box at the replenishing side of the loom.

In looms of this general type it is common to provide a temple thread-cutter to cut the fresh or new filling at the selvage of the cloth nearer the replenishing side of the loom after such filling has been beaten in, and in order that the length of filling leading from the selvage to the end-holder on the filling-feeder or magazine shall clear the shuttle-box before the temple thread-cutter operates I have given a peculiar construction to the means for controlling the filling thread as the replenished shuttle moves out of the box.

My present invention is more especially adapted for use on looms in which shuttles are used provided with a threading device forming the subject-matter of United States Patent No. 933,497 granted to me September 7, 1909.

The threading device therein shown comprehends several novel features, among which is the shield or guard which overhangs the beak at the outer end of the thread passage, such shield being extended forward to a point beyond the apex of the beak, such apex being the point at which the forward curve of the beak is reversed toward the tip of the beak. Such forward extension of the shield prevents the filling from drawing over behind the apex, and thence off the beak, on the second pick of the shuttle after replenishment, and the shield performs such function perfectly, but in running the loom at high speed the forward extension of the shield sometimes de-

lays the prompt threading of the shuttle. That is, the path of the filling end from the bobbin in the shuttle to the end-holder on the filling-feeder is so great that the filling may not be drawn under the beak until the shuttle has nearly or quite reached the opposite side of the loom, tending thereby to failure to properly thread on the return pick.

It has been proposed to engage the filling-end by a device projecting rearward over the top of the replenishing shuttle-box and thereby to hold the filling in alinement substantially with the longitudinal axis of the shuttle, but such an arrangement holds the filling so far back toward the rear side of the shuttle that it cannot pass under the frontwardly extended shield, in my patented structure referred to, and the shuttle will fail to thread. To overcome the objections mentioned I have mounted on the front wall of the replenishing shuttle-box a thread-engaging device or controller, which engages the fresh filling-end as the lay moves back after replenishment of filling has been effected, so that the filling leads from the bobbin in the shuttle to a point on the front wall of the box. Thus the thread of filling lies in a path which is at a small angle to the longitudinal axis of the shuttle and such that the filling is yet held toward the front of the box so that it cannot lie upon the top of the shield forming a part of the threading device. Consequently, when the shuttle is picked the thread of filling will be held in such position that it draws across the beak and beneath the front edge of the shield just before the threading end of the shuttle leaves the box, and consequently, as the shuttle continues its flight the thread is surely and positively carried down and under the beak by the action of the front and forward edges of the shield, so that the threading device assumes the desired control of the filling thread. As will appear hereinafter this thread engaging device or controller is so constructed that on the second backward stroke of the lay after replenishment the length of filling between the selvage of the cloth and the filling-feeder will be shed or disengaged automatically from the controller, to drop outside the shuttle-box after the temple thread-cutter operates.

The novel features of my invention will

be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a top plan view of a sufficient portion of an automatic filling replenishing loom with my invention applied thereto, the shuttle having just received a fresh supply of filling; Fig. 2 is a view similar to Fig. 1, but omitting the replenishing mechanism, and showing the filling end engaged by the controller as the lay moves back, the shuttle being shown as just about to leave the replenishing shuttle-box; Fig. 3 is a right hand end elevation of some of the parts shown in Fig. 1; Fig. 4 is a front elevation of the front wall of the replenishing shuttle-box, with my novel thread engaging device or controller thereon.

Referring to Fig. 1 the lay A, picker B for moving the shuttle through the shed, the shuttle-box C having a front wall D, and mechanism to replenish automatically the shuttle with filling, comprising the rotatable filling-feeder or magazine E, F shown in full and dotted lines, Fig. 1, the transferrer G and its adjuncts, the end-holder carried by or forming a part of the feeder and consisting of a bell-shaped member or disk H and central stud I, and the breast-beam J on which the replenishing mechanism is mounted, may be and are all of usual construction and operation and familiar to those skilled in the art. In such apparatus the filling ends are led from the reserve filling-carriers or bobbins mounted in the feeder to the stud I and around the notched periphery of the disk H, the feeder herein illustrated being of the well known rotary type, and when a filling-carrier is inserted in the shuttle by the transferrer the filling end leads from such carrier outward under the disk H and up to the stud I, which is coaxial with the feeder, so that as the shuttle is picked from the replenishing box C the filling draws off from the filling-carrier. At the same time the lay is moving backward, so that the angle between the thread from stud I to the shuttle and the path of movement of the latter is relatively large, the natural tendency of such thread being to draw frontward over the wall D of the shuttle-box. The angle mentioned is so great that the threading device on the shuttle may not assume control of the filling thread until nearly at the end of its shot, and sometimes not then, resulting in thread breakage on the next pick. In some cases this fault may be corrected by providing a guide on the lay extended rearward over the top of the replenishing shuttle-box, to engage the filling thread as the lay swings back after replenishment and hold the thread substantially in alinement with the longitudinal axis of the receding shuttle. Such an arrangement is of no value, how-

ever, when the shuttle is provided with a threading device having the shield extended frontward beyond the apex of the beak, as in my patent hereinbefore referred to, or in other patents granted to me at the same time, Nos. 933,728 and 933,729, for the centrally held filling thread is prevented from passing under the front edge of the shield to be thereby depressed and carried beneath the beak.

In my present invention I have devised a thread engaging device or controller which coöperates with the filling end as the lay swings back after replenishment and causes the filling end to lead to the shuttle from a point on the front wall of the box near its outer end, at a small angle to the longitudinal axis of the shuttle and so positioned that the filling thread will pass under the front edge of the shield just before the shuttle leaves the box.

In Figs. 1 and 2 the shuttle K is shown as provided with a threading device which includes the beak b^6 rearwardly extended over the outer end of the thread passage and the shield b^3 frontwardly extended and overlapping the beak and having its front edge at a considerable distance beyond the apex of the beak, substantially as in my patents referred to.

Upon the top of the front box-wall D, I provide a thread engaging device or controller, shown in the present embodiment of my invention as an elongated, longitudinally extended lip 1 upturned from the top of the box-wall and rearwardly inclined, the upper edge 2 of such lip gradually rising from the top of the wall, at 3, to its outer, upper corner, at 4, and the outer end 5 of the lip is not only inclined rearward, as shown in Fig. 3, but it is also inclined outwardly, as shown in Fig. 4, the corner 4 being slightly rounded, as shown. In practice this thread engaging lip or controller is conveniently made as a part of the box-wall casting, and in front elevation the lip is triangular in shape, its base being parallel to the inner or rear face of the wall D, but by reason of the upward and rearward inclination of the lip as a whole its upper edge 2 is diagonally extended, as clearly shown in Figs. 1 and 2, the lip overhanging the top of the wall D but it does not project over the top of the shuttle-box, as will be apparent.

Referring to Fig. 1 the shuttle K has just been provided with a fresh filling-carrier or bobbin L, and the filling end M leads therefrom in a diagonal direction upward and rearward to the disk H and thence to the stud I, Figs. 1 and 3. As the lay moves back and the transferrer G rises the feeder is rotated in the direction of the arrow, Fig. 3, to move the next filling-carrier to transferring position, and the filling end M will then be held

by the disk H at a point beneath the axis of the feeder, but the picking operation begins, usually, just after the lay passes top center, and as the lay is moving back the filling end
 5 M is engaged by the controller 1 and drawn around its outer end 5, as shown in Fig. 2, as the pick of the shuttle begins. The shuttle continues its movement, and just before it leaves the box C the filling thread is posi-
 10 tioned by the controller as shown in Fig. 2, at a small angle to the longitudinal axis of the shuttle and across the exposed portion of the beak in such position with relation to the shield b^3 that its front edge positively
 15 engages and depresses the thread below the beak, practically before the eye-end of the shuttle leaves the shuttle-box. There is no interference with the movement of the picker, the top of the shuttle-box is wholly clear
 20 and open, and as the lay continues its backward movement the thread of filling continues to lead from a fixed point, to wit, the notch or recess formed by the top of the box-wall and the outer edge 5 of the thread controller. By inclining the edge 5 the thread
 25 is drawn down surely and positively into the notch, so that there is no danger of its escape prematurely, and the rearward inclination or overhang of said controller as a
 30 whole serves to still further insure the engagement and holding of the filling thread.

When the thread is carried down and under the beak of the threading device the complete threading of the shuttle is inevitable on the return pick of the shuttle, as
 35 will be understood by those familiar with this class of apparatus, and it will be manifest that if the filling end should be permitted to assume the broken line position M^x ,
 40 Fig. 2, (as it would without the use of the thread controller) the control of the thread by the threading device on the shuttle must inevitably be retarded until the shuttle is well on its way toward the non-replenishing
 45 side of the loom. The primary function of the thread controller has been performed herein practically before the shuttle leaves the replenishing shuttle-box C, as has been explained, and after boxing of the shuttle
 50 at the opposite side of the loom the filling just laid is beaten in, and as the lay moves frontward the filling will extend from the right-hand selvage of the cloth to the end-holding means on the filling-feeder, to be
 55 cut at the selvage by the usual temple thread-cutter. It is now necessary that the length of filling leading from the selvage to the end-holding means be disengaged or cleared from the thread-controller 1 before
 60 it is cut at the selvage, in order that the cut end may not lie in the shuttle-box C, and the secondary function of the controller is to clear itself of the length of filling referred to.

When the first pick of fresh filling is
 65 beaten in the shuttle is at the left-hand side

of the loom, and the beating in causes the specified pick to be held in the cloth, so that as the lay moves back after the beat-up the slack length of filling leading to the right from the selvage of the cloth will travel 70 across the top of the box-wall D and as the lay continues to recede such filling slides up the inclined upper edge 2 of the controller and is shed therefrom over its corner 4. This length of filling is thereby cleared or 75 shed from the thread controller, it hangs between the cloth and the end-holding means in front of the lay, and when cut at the selvage drops down and trails from the stud I, out of the way of the shuttle, picker, and 80 lay, and hence cannot be caught in the shuttle-box or caused to foul the shuttle or the running filling. Thus by a very simple device I cause the shuttle to assume prompt control of the fresh filling before the shuttle 85 leaves the shuttle-box after replenishment, and I clear the filling-end automatically from the thread controller, shuttle-box, shuttle, and other parts of the mechanism before the temple thread-cutter serves the filling- 90 end at the selvage of the cloth.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a filling replenishing loom, a lay, a 95 shuttle-box thereon at the replenishing end, and a thread controller rigidly mounted on the front box-wall and having its upturned outer end inclined in fixed position at all times with relation to the top of the front 100 box-wall to form therewith a thread-receiving recess, said controller engaging and carrying rearward the fresh filling-end on the backward stroke of the lay after replenishment. 105

2. In a filling replenishing loom, a lay, a shuttle-box thereon at the replenishing end, and a thread controller on and having its upturned outer end inclined with relation to the top of the front box-wall to form there- 110 with a thread-receiving recess, said controller engaging and carrying rearward the fresh filling-end on the backward stroke of the lay after replenishment, the thread-controller having its upper edge inclined gradu- 115 ally from the top of the box-wall to the upturned outer end, to disengage and shed from the controller the filling-end extending outward from the cloth on the backward stroke of the lay after the first pick of fresh 120 filling has been beaten in.

3. In a filling replenishing loom, a lay, a shuttle-box thereon at the replenishing end, and a thread-controller on the top of the front box-wall, said controller being formed 125 as an elongated lip upturned and rearwardly inclined and having its upper edge gradually rising from the top of the wall to the outer corner of the lip, the outer end of the lip being inclined rearward and outward, 130

the fresh filling-end passing behind and under the controller and around its outer end on the backward stroke of the lay following replenishment and leading therefrom to the shuttle.

4. In a filling replenishing loom, in combination, a shuttle having a threading device provided with a beak and an overlapping shield extended frontward beyond the apex of the beak, a lay, a shuttle-box thereon, and means rigidly mounted on the lay and having a fixed position at all times relatively to the front box-wall, to engage the fresh filling-end on the backward stroke of the lay after replenishment and cause the filling to lead from a fixed point on the front wall of the shuttle-box to the shuttle in position to be engaged by and pass under the shield before the shuttle wholly leaves the box.

5. In a filling replenishing loom, in combination, a shuttle having a threading device provided with a beak and an overlapping shield extended frontward beyond the apex of the beak, a lay, a shuttle-box thereon, and an elongated, longitudinally extended and upturned and rearwardly inclined thread-engaging lip on the top of the front box-wall, to engage the fresh filling-end on the backward stroke of the lay after replenishment and position the thread at the front of the shield and to pass thereunder as the replenished shuttle is leaving the box, the upper edge of said lip being inclined to shed and disengage the filling-end from the lip on the second backward stroke of the lay after replenishment.

6. In a filling-replenishing loom, a lay, a shuttle-box mounted thereon, and an elongated triangular thread controller on the top of the front box-wall near its outer end and upwardly and rearwardly inclined with relation thereto, the upper edge of the con-

troller gradually rising toward its outer end from the top of the box-wall.

7. In a filling replenishing loom, in combination, a shuttle having a threading device, a lay having a shuttle-box at the replenishing end thereof, and means fixed on the lay to engage the fresh filling-end and cause it to lead to the shuttle in a diagonal line crossing the plane of the inner face of the front box-wall and the longitudinal axis of the shuttle and presenting the thread of filling in position to be engaged by the threading device on the shuttle.

8. In a filling replenishing loom, a lay, a shuttle-box thereon, and a longitudinally extended, upturned and rearwardly inclined lip on the front wall of the box near its outer end, to pass over and engage the filling-end on the backward stroke of the lay following filling replenishment and cause the filling to lead from a fixed point on the top of said box-wall to the shuttle as the latter is leaving the shuttle-box.

9. In a filling replenishing loom, a lay, a shuttle-box thereon, and a fixed, upturned and rearwardly inclined thread controlling lip on the front wall of the box near its outer end, the outer end of the lip forming with the top of the wall a thread-receiving notch; the filling-end passing behind the lip into the notch and around the outer end of the lip on the backward stroke of the lay after filling replenishment, to cause the filling to lead to the shuttle directly from a fixed point on the top of the box-wall when the shuttle is picked.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

EDWARD S. STIMPSON.

Witnesses:

GEORGE E. CHANDLER,
E. D. OSGOOD.